

Hazardous Substances Emergency Events Surveillance

1997 Annual Report

Carol Braun
Office of Surveillance

The Hazardous Substances Emergency Events Surveillance (HSEES) system, established by the federal Agency for Toxic Substances and Disease Registry (ATSDR) in 1990, collects information on the direct public health impact of emergency events involving hazardous substances. Missouri's HSEES program has completed its fourth year of data collection. As the program continues, new notification sources are explored and information is shared and analyzed to determine the public health impact of emergency events involving the release of hazardous substances in the state.

All Missouri HSEES data are transmitted to ATSDR for analysis with the data collected from the other 13 participating states. Personal/company identifiers are not transmitted to or maintained by ATSDR to protect the confidentiality of program participants.

Because the intent of the HSEES program is to reduce the morbidity and mortality related to hazardous substances emergency events, it is important that the public, emergency responders, employees and industries receive feedback from the program concerning case investigations. In those cases where development of intervention strategies might prevent similar future incidents, specific summary investigation reports are prepared and distributed to the community involved. When appropriate, health education programs to promote prevention strategies are conducted for the affected industry, local emergency planning committees, emergency responders, etc.

This report was supported by funds from the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) trust fund provided to the Missouri Department of Health under Cooperative Agreement Number U61/ATU780955-02 from the Agency for Toxic Substances and Disease Registry, Public Health Service, U.S. Department of Health and Human Services.

Case Definition for Hazardous Substance Release

A hazardous substance release is entered in the HSEES system if it meets the following criteria:

1. An uncontrolled or illegal release or threatened release of one or more hazardous substances; and
2. The substances that are actually released or threatened to be released include ALL hazardous substances except petroleum products; and
3. The quantity of the hazardous substances that are released, or are threatened to be released, need (or would need) to be removed, cleaned up, or neutralized according to federal, state or local law; or
4. Only a threatened release of hazardous substances exists, but this threat leads to an action such as an evacuation that can potentially impact on the health of employees, responders or the general public. This action makes the event eligible for inclusion into the surveillance system even though the hazardous substances are not released.

Analysis of Data on Hazardous Substances Emergency Events

In calendar year 1997, a total of 2,272 potential environmental emergencies were reported to the HSEES office. Of this total, 1,680 (73.9%) were environmental emergency response reports received from the Missouri Department of Natural Resources' Environmental Services Program. The United States Coast Guard's National Response Center provided 573 (25.2%) reports, the Missouri Highway Patrol sent 17 (0.7%) notifications, and there was one (<1%) report each from the Missouri Department of Health and the media. Of the 2,272 reports received, 183 (8.1%) were considered to be hazardous substance releases (see sidebar) and were entered into the HSEES database for follow-up.

Of the 183 events classified as hazardous substance releases, 169 (92.3%) involved the release of only one

hazardous substance. The most commonly released substance was ammonia, occurring in 22 events. Other commonly released substances and number of occurrences were PCBs (11), pesticides (9), paint (6) and chlorine (5).

Events were scattered throughout the state, occurring in 54 counties and the City of St. Louis. This represents 47% of the counties in the state. Events occurred primarily in counties where there are larger cities, interstate highways and large manufacturing or mining facilities. See Figure 1 for the number of events occurring in each county.

One hundred thirteen (61.7%) of the releases occurred in fixed facilities while 70 releases (38.3%) were transportation-related. Of the 70 transportation releases, 55 (78.6%) were ground transportation, 12 (17.1%) were rail transportation and three (4.3%) were pipeline.

Of the 183 events, 150 (82.0%) occurred on weekdays and 33 (18.0%) occurred on weekends. One hundred thirty events (71.0%) occurred between 6 a.m. and 6 p.m., with 99 (54.1%) occurring between the core working hours of 8 a.m. and 5 p.m. Fourteen events (7.7%) occurred between 12:01 a.m. and 5:59 a.m., and 24 (13.1%) occurred between 6:01 p.m. and 11:59 p.m. Time of event was unknown for 15 (8.2%) events.

Evacuations were ordered by an official in 17 (9.3%) events. Ten evacuations involved a total of 1,553 people. The number of people evacuated in seven events is unknown. Eleven evacuations involved a building or an affected part of a building, four evacuations were within a specified radius of a release, and two evacuations were downwind.

Thirteen (7.1%) releases involving 12 different substances resulted in 23 persons with single or multiple injuries (41 total injuries). The largest number of victims associated with a release was five. The most common types of injuries reported were nausea/vomiting (6), headache (6), trauma (5), and eye irritation (5). Injuries experienced also included chemical burns, skin irritation, thermal burns, and respiratory irritation. See Figure 2.

Of the 23 victims, nine were employees, seven were members of the general public, two were policemen, two were professional fire fighters, two were volunteer fire fighters and one victim's occupation is unknown.

Six persons were treated at the scene of the event, seven were admitted to a hospital, six were treated at but not admitted to a hospital, three were transported to a hospital for observation but received no treatment, and one person died. The death occurred in a transportation-related event, and it was determined that the death was attributable to the trauma of the accident, which involved the release of 40,000 pounds of acetone. A traffic accident was the event with the largest number of victims (5) who suffered a total of 11

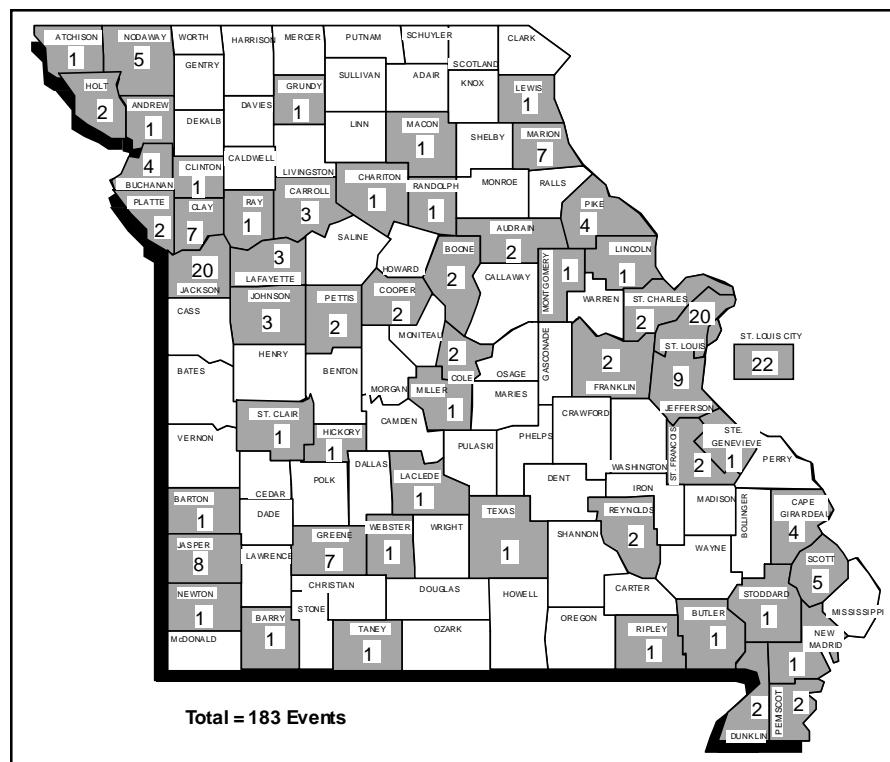


Figure 1. Location of non-petroleum hazardous substances emergency events by county, Missouri, 1997.

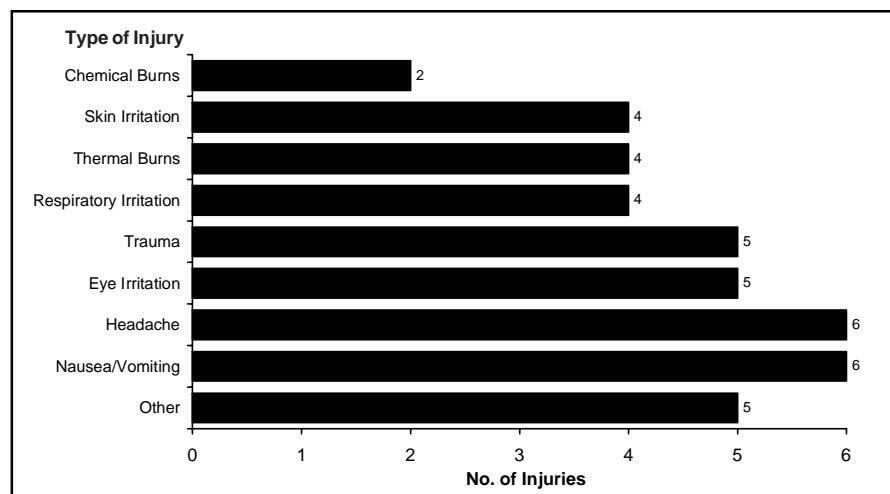


Figure 2. Number of injuries reported by type, Missouri HSEES, 1997.

Injuries. In this accident, a car with four passengers from the general public struck a pickup truck transporting a pesticide used for spraying roadside vegetation. The driver of the truck was an employee. The actual amount of pesticide released was unknown. Injuries included trauma, nausea, headache, cuts and bruises. In a separate incident involving the release of pesticide, one person was injured, making events involving pesticides the

number one injury-related category for the year. In another event, a cylinder containing methyl bromide was found by a construction crew when tearing down an abandoned building. When a valve on the cylinder was opened by the investigating responders, two volunteer fire fighters, a police officer, and a member of the public experienced eight injuries, including nausea, skin irritation,

(continued on page 16)

(continued from page 15)

and headache. A combination of formaldehyde and potassium hydroxide caused five injuries to three victims in one event. One event involving chlorine caused two injuries to two victims. The remaining hazardous substance releases associated with injuries involved one victim each. See Figure 3.

Reporting Events

The Missouri HSEES program is indebted to the Missouri Department of Natural Resources' Environmental Services Program for helping to investigate these hazardous substances emergency events. The program relies heavily on this unit for notification of releases and frequently contacts them for circumstances surrounding a release.

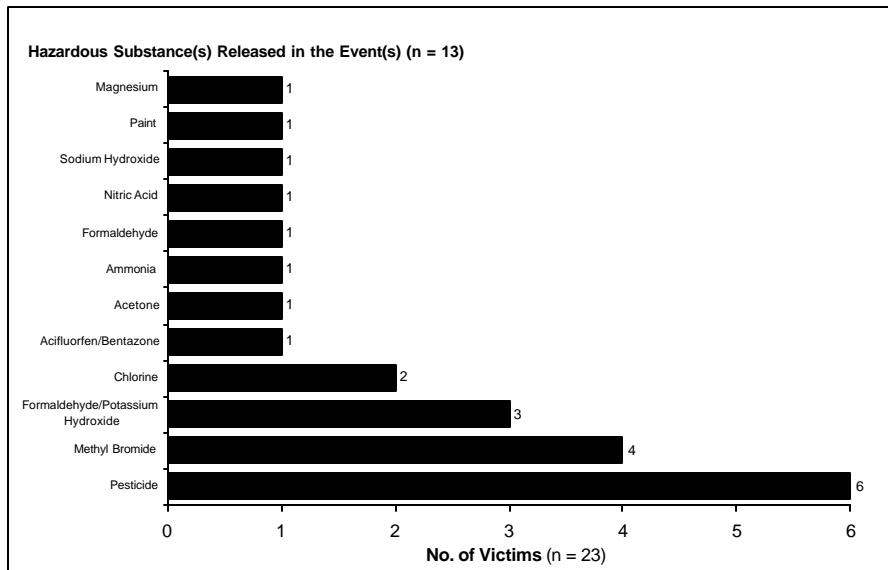


Figure 3. Number of victims by hazardous substance released, Missouri HSEES, 1997.